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Abstract

Experiences on the design, calculation and the manufacture for power reactor components

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The Neratoom Group has dealt and is dealing with four main components for power reactors.
This paper describes components for the powerstations SENN, KRB and SEP, which are of the boilingwater type, designed by the U.S. General Electric.
Based on functional specifications, stress analysis and heattransfer calculations were prepared and the design made for the secondary steamgenerators for SENN.
Similar work will be carried out for the reactor pressure vessel for the 50 MWe SEP power station.
The core structures for the SENN en KRB power stations were and respectively will be manufactured to construction drawings provided by the client.

This paper reports on the extensive calculations describing the dynamic behaviour of the SENN steamgenerators.
The severe manufacturing and control requirements and the way on which these were realised are described.
Concerning subjects are: welding procedures, welding tests and control, cracktests and leaktests.

Methods applied to realise the high dimensional accuracy required in the specification for the corestructures will be described.

Concerning reactor pressure vessels the influence of the pressure vessel codes ruling in different countries will be discussed. As these requirements for calculation and control sometimes are insufficiently defined and sometimes fail completely, a matter of difference may be created.

We think it sensible to strive after an internationally accepted code for stress calculations and control requirements.

Moreover the two possibilities of manufacturing reactor pressure vessels viz. the application of forged rings and the application of rolled and bent plates will be discussed.